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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/826,067

04/16/2004

Patrick Walsh

AD-352J

9968

7590

09/18/2006

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EXAMINER

WANG, TED M

ART UNIT

PAPER NUMBER

2611

DATE MAILED: 09/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/826,067

Applicant(s)

WALSH ET AL.

Examiner

Ted M. Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-11 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 12-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 3/16/05, 7/27/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The informal drawings, Fig. 2 – Fig. 5 are not of sufficient quality to permit examination. Accordingly, replacement drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to this Office action. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

### ***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

- The specification does not teach the limitation of “scaling the accumulated fractional phase by a predetermined frequency value; and loading the predetermined frequency value into an interpolator.” as recited.

### ***Claim Objections***

3. Claims 1, 2, 6, and 13 are objected to because of the following informalities:

- In claim 1, line 8, change “the” to --- a---.
- In claim 2, line 2, after “and” change “said” to --- a ---.
- In claim 6, line 1, change “4” to --- 5 ---.

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- In claim 13, line 3, change “the” to --- an ---, lines 4 and 6, change “frequency” to --- phase ---, respectively.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1-7, 12, and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

- With regard claims 1-7 and 12, the limitation “an interpolator responsive to an input fraction F/M,” as recited in claims 1, 7 and 12, respectively, is not enable since the input fraction F/M is the output of the interpolator (paragraphs 35 and 37, and Fig.2, 4 and 5, element 106). The specification specifically teaches “the interpolator 106 is responsive to a fraction (F), a phase adjustment value (P\_ADJ) and a modulus (M) and provides an output, input fraction F/M, to summer 24 (paragraphs 35 and 37, and Fig.2, 4 and 5, element 106).

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- With regard claim 14, the limitation “applying a fractional value and a modified fractional value to an interpolator” in line 5-6, is not enable since the specification specifically teaches “includes phase adjustment circuit 302' which includes switching circuit 120 for **selectively** applying the fractional value (F) and a modified fractional value (F+P) to interpolator 106 on line 130 to vary the phase of the output signal,” in paragraph 36 and Fig.4 element 120. That is, the specification teaches either applying the fractional value (F) or applying the modified fractional value (F+P) to interpolator 106, but not both.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 13 is rejected under 35 U.S.C. 102(b) as being anticipated by Bockleman et al. (US 6,353,649).

- With regard claim 13, Bockleman et al. discloses a method of varying the phase of the output signal with respect to the input reference signal (Fig.2 element 220) of a fractional-N synthesizer (column 3 lines 17-23), the method comprising the steps of:

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tracking the accumulated fractional phase (Fig.3 element 304 and column 3 lines 16-19);

scaling the accumulated fractional phase by a predetermined frequency value (Fig.3 elements 306  $P=D*(1-FRAC\{C/N\})$  and column 3 lines 13-30); and

loading the predetermined frequency value into an interpolator (Fig.3 element 310, where digital phase converter (DPC) 310 is the same as that of DPC 216 in Fig.2 that is a delayed locked loop time interpolator as cited in column 2 lines 1-2) to define a predetermined output frequency and phase.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Keaveney et al. (US 6,556,086 B2).

- With regard claim 15, Keaveney et al., cited by the instant applicant, discloses a method of varying the phase of the output signal with respect to the input signal of a fractional-N synthesizer (Fig.1 element 10), the method comprising:

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generating a synchronization pulse (Fig.1 element 40) at integer multiples of periods of the input reference signal (Fig.1 element 28 and column 2 lines 26-33);

generating a predetermined phase adjustment value (Fig.1 elements F, M, and F/M, column 1 lines 46-51, where F is the input fraction and M is the Modulus and both F and M are predetermined, column 1 lines 47-51); and

generating an enable signal (Fig.1 elements 46 and 44 and column 4 lines 1-18) to reset (Fig.1 element 48 and column 4 lines 1-18) an interpolator (Fig.1 element 26) of said fractional-N synthesizer with said predetermined phase to vary the phase of said output signal with respect to said input reference signal (column 3 lines 48-59, where the frequency of its output,  $f_{OUT}$ , is changed by changing any one or more of the parameters F, M, N and received input frequency, since it is phase locked to the input frequency.)

***Allowable Subject Matter***

10. Claims 8-11 are allowed.
11. The following is an examiner's statement of reasons for allowance.
  - The prior art fails to teach an apparatus of Claim 8 that specifically comprises the following:
    - The instant application is deemed to be directed to a non-obvious improvement over the admitted prior art of the instant application and the invention patented in Pat. No. US 6,556,086, US

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6,600,378, US 6,621,317, and US 6,353,649. The improvement comprises "a phase adjustment circuit responsive to said input reference signal, an enable signal, a fraction (F), and a predetermined phase value, and a modulus (M), said phase adjustment circuit configured to generate a modified phase adjustment value" as recited.

### ***Conclusion***

12. Reference(s) US 6,600,378, US 6,621,317, and US 6,353,649 are cited because they are put pertinent to the fractional-N synthesizer with phase correction and interpolation. However, none of references teach detailed connection as recited in claim.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ted M. Wang

Ted M Wang  
Examiner  
Art Unit 2634